

NORTH AMERICAN SPECIES OF THE SUBGENUS
SCOTOPHILELLA DUDA (DIPTERA,
BORBORIDAE)

BY ANTHONY SPULER
PULLMAN, WASHINGTON

(Continued from page 84)

Leptocera (*Scotophilella*) **niveipennis** Malloch.

Malloch: Proc. U. S. N. M. 44. 370 (1913). (*Limosina*.)

Porto Rico.

Leptocera (*Scotophilella*) **minima** Malloch.

Malloch: Tran. Am. Ent. Soc. 40. 16 (1914).

Costa Rica.

Leptocera (*Scotophilella*) **albifrons**, new species. (Fig. 22.)

Shining black. Front more than twice as broad as deep, with frontal triangle, to near frontal lunule, and vertex shining; lower portion of setigerous and divergent stripes silvery pollinose; bristles of head reduced; fronto-orbital bristles divergent, the lower smaller than the upper; interfrontal bristles in two pairs, the posterior pair weaker than the other, the anterior pair cruciate; face and cheeks grayish pollinose; face slightly carinate, concave in profile; clypeus narrowly visible from in front; cheek one-third as high as eye; buccal setulæ weak, two in number; antennæ with third joint but slightly larger than second; arista two times antennal length, with short pubescence. Mesonotum broad, disc convex; dorsocentral bristles in one pair; acrostichal setulæ few in number, reduced to four pairs between the dorsocentral bristles, pleural sutures reddish. Legs with coxæ, trochanters, apices of femora, tibiæ and tarsi piceous; middle femora with three anterior preapical setæ; middle tibiæ with four extensor bristles, two on apical-half and two on basal-third, and the usual flexor bristles; hind metatarsi two-thirds as long as second joint. Abdomen as long as thorax, broad, ovate in female and cylindrical in male; second segment longer than the next two. Wings slightly brownish; second section of costa glossy black; costa produced slightly beyond third vein, first section short ciliate, equal to second and two-thirds as long as third; basal section of third vein two-fifths as long as last section of second vein, and shorter than the penultimate section of fourth vein; outer crossvein one-half as long as distance between cross-

veins; last section of third vein gently curved up; fourth vein evanescent; outer angle of discal cell appendiculate. Halteres with fuscous stem and piceous knob. Length, 1.25–1.5 mm.

Type.—Male: Kendrick, Idaho. June 7, 1917 (Melander).

Paratypes.—Fifteen specimens distributed as follows: Washington: Vashon, Glenwood, Almota, Mt. Constitution, Omak, Clarkston (Melander). Idaho: Kendrick, Moscow (Melander). California: Yosemite Valley (Cresson). Illinois: (Ill. Univ.).

Leptocera (*Scotophilella*) **curtiventris** Stenh.

Stenhammar: Coprom. Sci. 365. (107) 3 (1855). (*Limosina*.)

Duda: Abhand. Zool-Botan. Ges. Wien. X. 1. III. (1918).

(*Limosina*.)

Seven specimens, Washington: Vashon, Tulalip, Lake Crescent, Brinnon, Tacoma (Melander). Oregon: Viento (Melander).

Dr. Duda calls this species *L. mitchelli* Duda. However, specimens determined by Strobl as *L. curtiventris* Stenh. are not the same as those determined by Dr. Duda as *L. mitchelli*. The writer has therefore retained Strobl's determination.

Leptocera (*Scotophilella*) **dissimilicosta**, new species. (Fig. 16.)

Shining black. Front convex, one and one-half times as broad as deep, the two divergent stripes separated by the very narrow interfrontal stripes, opaque velvety black; setigerous stripes with some gray pollen; frontal triangle broad; bristles moderate; fronto-orbital bristles widely divergent, the upper directed backward, at least twice as long as the lower; orbital setulæ minute, not extending above fronto-orbital bristles; interfrontal bristles in three pairs, the middle pair longer than the other two but not cruciate; interfrontal setulæ in one pair, situated below and outward from, the lower interfrontal bristle; face grayish pollinose, concave in profile, slightly carinate; upper portion of face and carina between the antennæ reddish; clypeus narrowly visible from in front; cheek, at vibrissal angle, one-third as high as eye, grayish pollinose; bucca with an anterior bristle and two posterior setulæ; oral setulæ numerous, rather long at vibrissal angle; second joint of antennæ grayish pollinose; third joint two-thirds as long as broad, with whitish pubescence; arista two and one-half times antennal length, its pubescence short. Mesonotum convex, short, broad; dorsocentral bristles in two pairs, the anterior pair less than half as long as posterior; acrostichal setulæ arranged in eight irregular rows between the anterior pair of dorsocentral bristles; scutellum short triangular; marginal bristles four; pleuræ

semi-opaque, their sutures reddish; upper sternopleuræ with a posterior bristle and two anterior setæ. Front trochanter, middle and hind coxæ yellowish; tibiæ and tarsi fuscous; middle femora with five rather stiff preapical setæ on anterior side, middle tibiæ with two extensor bristles, one on basal third and one on apical third; hind tibiæ with no macrochaetæ; hind metatarsi one-half as long as second joint, both joints incrassate. Wings slightly smoked; veins brown, with second section of costa black; costa produced beyond third vein, first section setulose, with two basal bristles, second section three-fourths as long as third; basal section of third vein one-third as long as last section of second vein and two-thirds as long as distance between crossveins; outer crossvein nearly one-half as long as second section of fourth vein; third vein slightly curved up beyond middle of last section, ending a little before wing-tip; fourth vein evanescent; discal cell long, rather narrow; fifth vein produced a short distance beyond outer crossvein. Abdomen tapering posteriorly, bare or nearly so; second segment one and one-half times as long as third. Halteres black. Length, 2.75 mm.

Type.—Female: Olga, Wash. June 17, 1910 (Melander).

Paratypes.—Nine specimens from: Washington: Dewatto, Mt. Constitution, Tacoma, Olga (Melander). Idaho: Moscow Mt. (Melander).

Leptocera (*Scotophilella*) **rotundipennis** Malloch.

Malloch: Proc. U. S. N. M. 44. 370 (1913). (*Limosina*.)
Porto Rico.

Leptocera (*Scotophilella*) **elegans**, new species. (Fig. 17.)

Subshining black. Front convex, two-thirds as broad as deep, upper portion opaque black, with the setigerous stripes slightly shining; lower front reddish; bristles shining black; fronto-orbital bristles nearly equal in size; orbital setulæ weak, not extending above the upper fronto-orbital bristles; interfrontal bristles reduced, in five pairs, the anterior two pairs cruciate; interfrontal setulæ in one pair, located on lower margin of front midway between the interfrontal stripes and the orbital stripes; face dark fuscous to piceous, shining, shallowly concave in profile; carina but little developed between the antennæ; clypeus narrowly visible from in front; cheeks dusky yellow, browned anteriorly, one-third as high as eye when measured at vibrissal angle; buccæ with three weak setæ, oral setulæ distinct; antennæ reddish; third joint oval, with short whitish pubescence; arista two and one-half times antennal length, with microscopic pubescence. Mesonotum and scutellum lightly cinereous opaque; lateral margins of notum reddish; dorsocentral bristles in four pairs, the posterior pair strong, the anterior

two pairs very much reduced and somewhat indistinct; acrostichal setulæ short, arranged in eight rows between the anterior pair and four rows between the posterior pair of dorsocentral bristles; posterior pair of middle acrostichals much longer than the others; scutellum trapezoidal; marginal bristles four, the anterior two shorter than the others; pleuræ piceous with its sutures reddish to yellow. Legs pale brown with all coxæ and trochanters yellow; front femora with a row of short stiff bristles on outer surface; middle trochanter with a short bristle; middle femora with two stiff anterior preapical setæ; middle tibiæ with three extensor, one on basal third and two on apical fourth and the usual flexor bristles; hind metatarsi two-thirds as long as second joint. Wings hyaline; costa black, first section short ciliate, equal to second and one and one-fourth times as long as third; penultimate sections of third vein longer than penultimate section of fourth, two-fifths as long as last section of second vein and one and one-third times as long as outer crossvein; last section of third vein straight and ending near wing-tip; fourth vein not reaching wing-margin; outer angle of discal cell very short appendiculate. Abdomen as long as thorax; dorsum with few hairs; posterior margin of dorsal segments pale brown; segments equal or nearly so. Halteres pale brown to yellow. Length, 2 mm.

Type.—Female: Bermuda Islands. June 28, 1905 (Kincaid).

Paratypes.—Six specimens, located as follows: Oregon: Forest Grove (Cole). Iowa: Ames. Illinois: (Ill. Univ.). Washington, D. C. (Coquillett).

Leptocera (*Scotophilella*) **curtipennis**, new species. (Fig. 5.)

Subshining black. Front two times as broad as deep, with the two divergent stripes, divided by the interfrontal stripes, velvety black; lower front slightly reddish; bristles of vertex and occiput moderately strong; fronto-orbital setulæ not extending above the upper fronto-orbital bristle, microscopic; interfrontal bristles in three pairs, the upper not reaching the median line, the middle long and cruciate, the lower very weak, hair-like; interfrontal setulæ in two pairs, in divergent rows below the anterior pair of interfrontal bristles; ocelli white; face concave in profile; clypeus broadly visible from in front; cheek, at vibrissal angle, one-fourth as high as eye; vibrissæ long; buccal setulæ in two pairs, hair-like; oral setulæ distinct; antennæ diverging, third joint as long as second and one and one-half times as broad as long; arista three times antennal length, with short pubescence. Mesonotum with two pairs of dorsocentral bristles; acrostichal setulæ arranged in six definite rows between the anterior pair of dorsocentral bristles; scutellum small, triangular, marginal bristles four; pleural sutures brown; lower sternopleuræ fuscous; middle femora with three preapical bristles on anterior side, the one nearest apex, bristle-like; middle tibiæ with four pairs

of extensor bristles, two on basal and two on apical third, hind metatarsi two-thirds as long as second joint. Wings short and blunt, not reaching much beyond tip of abdomen, slightly browned; veins brown; costa ending at third vein, first section setulose, equal to second and two-thirds as long as third; penultimate sections of third and fourth veins subequal, two times as long as outer crossvein and two-fifths as long as last section of second vein; third vein straight on last section and ending near wing-tip; fourth vein not reaching wing margin; fifth vein produced a short distance beyond outer crossvein. Abdomen cylindrical, hairy, as long as thorax; second segment two-thirds as long as third. Halteres yellow. Length, 2 mm.

Type.—Male: Tacoma, Wash. May, 1912 (Melander).

Paratypes.—Eight specimens from Tacoma, Wash. (Melander).

Leptocera (*Scotophilella*) **rectangularis** Malloch.

Malloch: Tran. Am. Ent. Soc. 40. 19 (1914).

Costa Rica.

Leptocera (*Scotophilella*) **regularis** Malloch.

Malloch: Tran. Am. Ent. Soc. 40. 19 (1914).

Costa Rica.

Leptocera (*Scotophilella*) **pumila** Williston.

Williston: Tran. Ent. Soc. Lond. 432 (1896). (*Limosina*.)

St. Vincent, W. I.

Leptocera (*Scotophilella*) **Aldrichi** Williston.

Williston: U. S. Dept. Agr. Div. Ornithol. Mammal., Bul. 7, 259 (1893). (*Limosina*.)

Described from Argus Mts., California.

Leptocera (*Scotophilella*) **abundans**, new species. (Fig. 14.)

Shining black. Front convex, lower portion reddish; divergent stripes velvety black; bristles of head moderately long; fronto-orbital bristles not very strong, divergent, the upper but little longer than the lower; fronto-orbital setulae weak and not extending above the upper fronto-orbital bristles; interfrontal bristles in four pairs decreasing in size anteriorly, not cruciate; interfrontal setulae weak, in two pairs, one on each side of interfrontal rows; face and cheeks slightly gray dusted; cheeks, at narrowest

point, two-fifths as high as eye; vibrissæ long; oral setulæ long, hair-like, bucca setæ in three pairs, bristle-like, increasing in size toward vibrissal angle; face concave in profile, anterior margin of epistome somewhat curved up; clypeus broadly visible from above, carina but slightly developed except between antennæ; antennæ divergent, third joint oval; arista long, three times antennal length, with short and rather dense pubescence. Mesonotum irregular, short hairy, convex, rather broad; dorsocentral bristles in two pairs, the posterior pair much longer than the anterior two; acrostichal setulæ arranged in eight irregular rows between anterior pair of dorso-centrals, the posterior middle pair much longer than the others, bristle-like; scutellum rather large, triangular, disc opaque, rather flat, margin with four bristles and two small setæ at base; pleuræ opaque piceous, sutures reddish; upper sternopleuræ with two bristles, the anterior one-half as long as the posterior. Legs piceous to black, short hairy; middle trochanter with a small bristle; middle femora with a series of four short stiff setæ on the apical fourth of the anterior side; middle tibiæ with the usual flexor bristles, and six extensor bristles, one small, near base, one on basal third, one on basal two-fifths, two on apical third and one near apex; hind metatarsi incrassate, two-thirds as long as second joint. Wings dusky; veins brown; costa ending at third vein, first section setulose, equal to third and two-thirds as long as second; basal section of third vein, two-fifths as long as last section of second vein, equal to distance between crossveins and twice as long as outer crossvein; last section of third vein straight, ending near wing-tip; last section of fourth vein faintly traceable from outer crossvein to wing-margin; discal cell short appendiculate. Abdomen as long as thorax, second and third segments nearly equal. Halteres fuscous. Length, 1.5 mm.

Type.—Female: Moscow, Idaho, June 1, 1917 (Melander).

Paratypes.—Eighty-three specimens from the following localities: Washington: Mt. Rainier, Omak, Glenwood, Vashon, Quilcene, Pullman, Palouse, Walla Walla, Kamiac Butte, Bellingham, Tacoma, Kettle Falls, Seattle, Oroville, Ephrata, Friday Harbor, Mt. Constitution (Melander). Idaho: Moscow, Craig Mts., Troy, Pottsville (Melander). Oregon: Eagle Creek, Portland (Melander). Montana: Lake McDonald, Glacier National Park (Melander). California: Berkeley Hills (Cresson); Fieldbrook (Barber). New Mexico: Alamogordo (Cresson). Pennsylvania: Swarthmore, Del. Co. (Cresson). British Columbia: Kaslo (Currie).

Leptocera (*Scotophilella*) *levigena*, new species. (Fig. 7.)

Shining black. Front convex, the two divergent stripes, divided by the narrow interfrontal stripes, velvety black; bristles of vertex and occiput

strong; interfrontal bristles in four pairs, increasing in size anteriorly, the anterior pair cruciate; interfrontal setulæ minute; fronto-orbital bristles directed outward, the lower much weaker than the upper; orbital setulæ weak; face and cheeks gray-dusted; face carinate, slightly concave in profile; clypeus broadly visible from in front; cheek from mouth margin to lower margin of eye, one-third as high as eye; buccal setulæ in two pairs, the anterior one bristle-like; oral setulæ increasing in size toward vibrissal angle, the one nearest vibrissæ, bristle-like; third joint of antennæ with whitish pubescence; arista two and one-half times antennal length, its pubescence microscopic. Dorsocentral bristles present in two pairs, the posterior pair considerably longer than the other, acrostichal setulæ short, numerous, arranged in eight rows between the anterior pair of dorsocentral bristles; scutellum large, triangular; marginal bristles four; pleural sutures reddish; upper sternopleuræ with a single posterior bristle. Legs long, hairy; middle femora with a row of six preapical anterior bristles which increase in size apically; middle tibiæ with seven extensor, two pairs on basal third and three bristles on apical third; hind metatarsi but little thickened, two-thirds as long as next joint. Wings elongated, somewhat pointed; costa ending at third vein, first section three-fourths as long as second, second equal to third; last section of second vein nearly three times basal section of third vein, last section of third vein curved forward, then backward and again forward to wing margin, ending near wing-tip; fourth vein traceable to wing-margin; fifth vein produced a short distance beyond outer crossvein. Abdomen as long as thorax, hairy; second segment slightly longer than third. Length, 2.25–2.5 mm.

Type.—Female: Cold Spring Harbor, New York. July (Melander).

Paratypes.—Seventeen specimens, distributed as follows: Washington: Clarkston, Valleyford, Wawawai, Lake Crescent, Pullman (Melander). Idaho: Moscow Mts., Craig Mts., Lake Waha (Melander). Oregon: Hood River (Melander). Montana: Thompson (Melander). California: Shasta Springs (Melander). New York: Cold Spring Harbor (Melander).

Leptocera (*Scotophilella*) **carinata**, new species. (Fig. 1.)

Subshining piceous. Front twice as broad as deep; lower front slightly browned; divergent stripes opaque black; bristles of front and vertex prominent; lower fronto-orbital bristle slightly smaller than the upper; orbital setulæ weak; interfrontal bristles in five pairs, the upper and lower pairs reduced, the remaining three pairs long and cruciate; face and cheeks brown; face carinate, slightly concave in profile; clypeus narrowly visible from in front; cheeks, at vibrissal angle, a little less than one-third as high as eye; vibrissæ strong; buccæ with three rather small setæ; oral setulæ

weak; antennæ widely divergent, third joint twice as broad as long, with minute whitish pubescence; eyes large. Mesonotum broad, lateral margins brown, disc convex; dorsocentral bristles in two pairs; acrostichal setulæ short, numerous, arranged in about eight irregular rows; scutellum opaque, triangular; marginal bristles four; pleural sutures yellowish, upper sternopleuræ with two bristles, the anterior bristles much smaller than the other. Legs brown, with coxæ and trochanters lighter; front femora with a single outwardly projecting bristle on upper surface; middle femora with five anterior and a single posterior preapical bristles, hind tibiæ without macrochaetæ, hind metatarsi not thickened, two-thirds as long as the next joint. Wings yellowish; costa brown, other veins pale brown; costa ending at third vein, all sections subequal in length, basal section of third vein a little less than one-half as long as last section of second vein and a little longer than the second section of fourth vein; outer crossvein at twice its own length from inner; last section of third vein straight or but slightly curved up and ending near wing-tip; fourth vein traceable to wing-margin; discal cell rather broad, its outer angle short appendiculate. Abdomen with posterior margins yellow; lateral margins with rather uniform hairs. Halteres whitish. Length, 2–2.5 mm.

Type.—Female: Illinois (Melander).

Paratypes.—Two specimens, from Brookings, S. D. (Johnson); Beverly, Mass. (Melander).

Leptocera (*Scotophilella*) **gibba**, new species. (Fig. 8)

Cinereo-opaque black. Front as broad as long, slightly grayish pollinose except on divergent stripes; interfrontal bristles in three pairs; antennæ reddish brown; third joint broader than long; arista a little more than two times antennal length, with long pubescence; face broadly carinate, slightly concave in profile; clypeus narrowly visible from in front; lower margin of epistome not curved up; cheeks slightly gray-dusted, one-third as high as eye. Mesonotum with disc decidedly convex; dorsocentral bristles in three pairs; scutellum triangular; margin with four bristles; pleural sutures yellowish, sternopleuræ with a single bristle. Legs browned, hairy; front tarsal joints depressed; middle femora with a row of five short stiff setæ at base; middle tibiæ with the usual bristles; hind tibiæ thickened apically; first two joints of hind tarsi distinctly thickened; hind metatarsi but little more than one-half as long as second joint. Abdomen cylindrical, shorter than thorax; second segment but little longer than third; hypopygium not large. Halteres yellow. Wings hyaline, veins brown; costa not extending beyond third vein, second section distinctly longer than third; second section of fourth vein shorter than basal section of third; discal cell short; last section of third vein slightly bent up beyond middle. Length, 2 mm.

Type.—Male: Battersea, Jamaica. Feb., 1910 (R. Thaxter).

Paratypes.—Two specimens from the same locality.

The specimens were preserved in alcohol and had lost most of their original color as well as some of their bristles.

Leptocera (*Scotophilella*) **rara**, new species. (Fig. 3.)

Subshining black. Front broader than long, shining, with the divergent stripes velvety black; bristles of head moderately long; interfrontal bristles in four pairs, the anterior pair considerably reduced; antennæ divergent, slightly browned; arista a little more than twice the antennal length, with distinct pubescence; face dark fuscous, deeply concave in profile; epistome slightly curved up, carina developed between the antennæ only; eyes rather large; cheeks slightly gray-dusted, one-third as high as eye at vibrissal angle. Mesonotum shining black with eight rows of short acrostichal setulæ between the anterior pair of dorsocentral bristles; dorsocentral bristles in two pairs, the anterior pair considerably smaller than the posterior; scutellum opaque, with four marginal bristles. Legs short hairy; middle femora with a single anterior preapical bristle; middle tibiæ with the usual bristles rather weak; hind metatarsi thickened, two-thirds as long as the second joint. Abdomen rather broad, with the second segment nearly twice as long as the third. Wings slightly browned; costa black, ending at wing-tip, all sections very nearly equal, with the third very slightly longer; veins pale brown; third vein straight, ending much before wing-tip; discal cell short and broad; outer crossvein twice as long as the second section of fourth vein and two-thirds as long as basal section of third vein. Halteres dark fuscous. Length, 1.5 mm.

Holotype.—Male: Berkeley, Cal. (Cresson).

This species is easily distinguished from all the other species of this subgenus by the wide discal cell and the short distance between the crossveins.

Leptocera (*Scotophilella*) **quadrisetosa** Malloch.

Malloch: Tran. Am. Ent. Soc. 40. 18 (1914).

Costa Rica.

Leptocera (*Scotophilella*) **bisecta** Malloch.

Malloch: Tran. Am. Ent. Soc. 40. 20 (1914).

Costa Rica.

Leptocera (*Scotophilella*) **longicosta**, new species. (Fig. 26.)

Opaque black. Front slightly convex, one and one-half times as broad as deep, gray dusted, with the setigerous stripes and frontal triangle slightly

shining; bristles of the head prominent; fronto-orbital setulæ very weak; interfrontal bristles in three pairs, the posterior and anterior pairs quite weak, the middle pair long and cruciate; interfrontal setulæ, weak, in one pair; antennæ moderate in size; third joint oval, one and one-half times as broad as long, with whitish pubescence; arista three times antennal length, short pubescent; face dark fuscous to piceous with gray pollen, deeply concave in profile; clypeus broadly visible from in front; cheeks gray dusted, one-third as high as eye; buccal setulæ present, five in number, upturned, anterior two longer than the others and one-half as long as the vibrissæ. Mesonotum with two pairs of dorsocentral bristles, the anterior pair much weaker than the posterior; acrostichal setulæ weak, arranged in six rows between the posterior pair; posterior pair of middle acrostichals, long, almost as long as the anterior pair of dorsocentrals; scutellum quadrangular disc flat; marginal bristles four; pleural sutures reddish, sternopleuræ subshining. Abdomen cylindrical, lateral margins with long hairs; second segment elongated, one and two-thirds times as long as third; hypopygium shining black. Legs with coxa, trochanters, apices of femora, tibiæ and tarsi fuscous. Front femora with a row of long hairs on ventral side; middle femora with two preapical anterior bristles; hind tibiæ without bristles; hind metatarsi thickened, one-half as long as next joint. Wings brownish; veins brown; costa produced beyond third vein, first section costa short and ciliate, three-fourths as long as second, second equal to third; last section of second vein two and one-half times as long as basal section of third vein; section of fourth vein between crossveins slightly longer than outer crossvein and three-fourths as long as basal section of third vein, last section of third vein bent up at inner crossvein and ending before wing-tip; marginal cell narrow; fourth vein traceable to wing-margin; fifth vein ending abruptly at a distance equal to outer crossvein from outer crossvein. Halteres with yellow stem and fuscous knob. Length, 1.25–1.5 mm.

Type.—Male: Valleyford, Wash., July 14, 1918 (Melander).

Paratypes.—One hundred twenty-five specimens from the following localities: Washington: Valleyford, Leavenworth, Lancer, Glenwood, Tacoma, Pullman, Bellingham, Almota, Wawawai, Clarkston, Mt. Constitution, Palouse, Seattle, Friday Harbor, Omak, Centralia, Adna, Vancouver (Melander). Idaho: Moscow, Priest Lake, Potlatch, Collins, Avon, Chatcolet (Melander); Troy (Cresson). British Columbia: Kaslo (Currie). California: Redwood Canyon, Berkeley Hills, Yosemite Valley (Cresson). New Hampshire: Mt. Washington (U. S. N. M.). Pennsylvania: Swarthmore (Cresson). Illinois: (Ill. Univ.). New York: Cold Spring Harbor (Melander).

Leptocera (*Scotophilella*) **crassimana** Haliday. (Fig. 2.)Haliday: Ent. Mag. III. 328. (1836). (*Limosina*.)Duda: Abhand. Zool-Botan. Ges. Wien. X. I. 167 (1918). (*Limosina*.)

This is a very common species and has a wide distribution. It is easily distinguished by its depressed front and hind tarsal joint. Two hundred and eighty-five specimens have been examined from the following localities: Washington: Index, Almota, Friday Harbor, Bellingham, Winlock, South Bend, Yakima, Pt. Gamble, Brinnon, Vashon, Adna, Lake Cushman, Shelton, Blaine, Montesano, Mt. Constitution, Monroe, Lynden, Arlington, Nooksack, Olga, Wawawai, Kamiac, Pullman, Spokane, Tacoma, Lake Crescent, Woodland (Melander); Ilwaco (Spuler); Guemes Isl. (Aldrich). Idaho: Potlatch, Priest Lake, Chatcolet, Moscow, Lewiston (Melander). Oregon: Portland, Viento, Forest Grove (Melander). Montana: Lake McDonald, Flathead Lake (Melander). California: Mill Valley (Aldrich); Muir Woods, San Francisco (Melander); Fieldbrook (Barber). British Columbia: Langley, New Westminster (Melander); Kaslo (Currie). Alaska: Popoff Isl. (Kincaid), Douglass (Jenne). Illinois: Chicago (Melander). Vermont: Lynden (Melander).

Leptocera (*Scotophilella*) **sylvatica** Meigen.Meigen: S. B. VI. 27. (1830). (*Borborous*.)Duda: Abhand. Zool-Botan. Ges. Wien. XI. 105 (1918). (*Limosina*.)**Mycetia claripennis** Robineau-Desvoidy: Myod. 806 (1830).

This European species of *Scotophilella* is reported from Arlington, Virginia, by Frederick Knab. (Insecutor Insectiae Menstruus, IV. 3 (1916).

Leptocera (*Scotophilella*) **luctuosa**, new species. (Fig. 2.)

Black subshining. Front two-thirds as broad as deep, gray pollinose, the divergent stripes darker; fronto-orbital bristles divergent, directed outward, the lower one-half as long as the upper; orbital setulæ present, weak, not extending above the upper fronto-orbital bristle; interfrontal bristles in three pairs, the posterior pair slightly weaker than the anterior two, the

anterior two pairs cruciate; antennæ divergent; arista two times antennal length, microscopically pubescent; face shining black, yellow between antennæ, cheek from mouth margin to lower margin of eye, one-fourth as high as eye; bucca with three setæ, the anterior one bristle-like; oral setulæ hair-like. Mesonotum with two pairs of dorsocentral bristles, the anterior pair very much weaker than the other; acrostichal setulæ short, arranged in eight rows between the anterior pair of dorsocentral bristles; scutellum quadrangular; marginal bristles four; lower pleuræ gray-dusted; sternopleuræ with a posterior bristle and anterior setæ. Legs with trochanters, knees, and tarsi piceous; front coxæ silvery pollinose; middle tibiæ with three bristles on extensor surface, one on basal half and two on apical third; hind metatarsi two-thirds as long as next joint. Wings browned; second section of costa black, other veins piceous; costa ending at third vein, first section short ciliate with two basal bristles, three-fourths as long as second, second equal to third; last section of second vein two and one-half times as long as basal section of third vein; distance between crossveins equal to basal section of third vein and two times outer crossvein, last section of fourth vein slightly bent forward on basal third; fourth vein evanescent; fifth vein produced a little beyond outer crossvein; discal cell broad. Abdomen shining black, longer than thorax, ovate, dorsum flattened; segments equal. Halteres piceous. Length, 2–2.25 mm.

Type.—Female: Pullman, Wash., April 10, 1908 (Melander).

Paratypes.—Eight specimens from Pullman, Wash.; Moscow and Lake Waha, Idaho (Melander).

Leptocera (*Scotophilella*) **nigrifrons**, new species. (Fig. 25.)

Black subshining. Front broader than long with the divergent stripes, divided by the narrow interfrontal stripes, opaque; setigerous stripes ridged; bristles of head prominent; fronto-orbital bristles extended backward and outward over eye; orbital setulæ weak, the upper two pairs somewhat stronger; interfrontal bristles strong, in three pairs, the middle pair much stronger than the others, middle pair cruciate; interfrontal setulæ in two pairs, located laterally; cheeks brown, changing to black toward occiput, narrow, distance from lower margin of eye to oral margin, one-fifth as high as eye; face brown, concave in profile; epistome slightly projecting upward; clypeus broadly visible from above; carina slightly developed between the antennæ only; antennæ piceous; third joint oval and covered with a whitish pubescence; arista three times antennal length, its pubescence short and dense. Mesonotum with two pairs of dorsocentral bristles, the posterior pair twice as long as the anterior; acrostichal setulæ arranged in eight rows between the anterior pair and in six rows between the posterior pair of dorsocentral bristles; scutellum triangular; marginal bristles four, the posterior pair much longer than the anterior; pleuræ piceous, sutures lighter,

sternopleuræ with a single bristle. Legs piceous, hairy; middle femora with a row of setulæ on the anterior side, the one nearest the apex bristle-like; middle tibiæ with the usual flexor bristles, and six extensor bristles arranged as follows: one pair at basal third, one pair at apical third, and one pair, strong, at near apex; hind metatarsi depressed, three-fifths as long as the second joint. Knob of halteres piceous, stem yellow. Wings infusate; veins brown; costa ending at third vein, first section shorter than the second, third section nearly as long as second; last section of second vein two and one-half times as long as basal section of third vein; basal section of third vein equal to second section of fourth and less than two times as long as outer crossvein; last section of third vein ending near wing-tip; last section of fourth vein traceable to wing-margin; fifth vein extending slightly beyond outer crossvein. Abdomen short, cylindrical; second segment one and one-fourth times as long as third; hypopygium large. Length, 1.5–2 mm.

Type.—Male: Seattle, Wash. (Melander).

Paratypes.—Twenty specimens distributed as follows: Washington: Seattle, Olga, Husum, Lilliwaup, Dewatto, Vashon, Pullman, Deer Park (Melander); Ilwaco (Spuler). Idaho: Glengary, Moscow Mt. (Melander). Oregon: Newport, Hood River (Melander). California: Berkeley Hills (Cresson).

Leptocera (*Scotophilella*) **ordinaria**, new species. (Fig. 19.)

Shining black. Front with setigerous stripes and frontal triangle gray-dusted, the two divergent stripes divided by the narrow interfrontal stripes, velvety black; lower front reddish; interfrontal bristles in three pairs, the posterior pair weaker than the other two, the anterior two pairs curciate; interfrontal setulæ in two pairs, extending along lower frontal margin; lower fronto-orbital bristle weaker than the upper; orbital setulæ microscopic, not extending above the upper fronto-orbital bristles; antennæ divergent; third joint oval with a whitish pubescence, one and one-half times as long as second; arista thread-like, two and one-half times antennal length, its pubescence short; face and cheeks piceous; face concave in profile, carina produced between the antennæ only; epistome but slightly curved up at its anterior margin; clypeus narrowly visible from in front; cheeks, from vibrissal angle to lower margin of eye, one-fifth as high as eye; buccal setæ two in number, upcurved, the anterior seta stronger than the other. Mesonotum broad, disc convex, with acrostichal hairs short, arranged in eight to ten rows between the anterior pair of dorsocentral bristles, the posterior pair of middle acrostichals long; two pairs of dorsocentral bristles present, the anterior pair weaker; scutellum triangular, disc flat; marginal bristles four, the posterior pair very long, longer than the anterior pair; pleuræ sutures yellow. Legs with coxæ, trochanters, tarsi of front and middle tibiæ and bases of hind tibiæ piceous; front femora slightly swollen, with two extensor

and four flexor bristles on the apical half; middle femora with three anterior preapical bristles, increasing in size apically; middle tibiæ with a weak flexor bristle on apical third in addition to the usual apical bristle and five extensor, two on basal half and three on apical third; hind metatarsi thickened, two-thirds as long as second joint. Wings with costal sections subequal or nearly so, first section short ciliate with two basal bristles; costa ending at third vein; basal section of third vein two-fifths as long as last section of second vein and slightly longer than penultimate section of fourth vein; distance between crossveins two times as long as outer crossvein; last section of third vein straight; fourth vein traceable to wing-margin; fifth vein ending abruptly a short distance beyond outer crossvein. Abdomen cylindrical in male, broader in female, almost bare; second segment one and one-half times third, hypopygium prominent. Length, 1.5-2 mm.

Type.—Male: Collins, Idaho (Melander).

Paratypes.—Thirty-four specimens, distributed as follows: Washington: Adna, Lynden, Mt. Constitution, Kamiac Butte, Dewatto, Olga, Bickleton, Kettle Falls (Melander). Idaho: Chatcolet, Collins, Moscow Mts., Potlatch, Lewiston, Avon (Melander). British Columbia: Kaslo (Currie). California: Muir Woods (Melander). Montana: Saltese (Melander). New Mexico: Alamogordo (Cresson). New Hampshire: Franconia (Mrs. Slosson). Illinois: (U. S. N. M.).

Leptocera (Scotophilella) evanescens Tucker. (Fig. 15.)

Kans. Univ. Sci. Bul. IV. 102 (1907). (*Limosina*.)

Douglas Co., Kansas, and Brookings, South Dakota.

The following notes are made from two type specimens labeled Brookings, South Dakota, kindly furnished by Dr. Snow:

Lower front, face and cheeks lightly reddish; face broadly tuberculate between antennæ, deeply excavated beneath tubercle; anterior margin of epistome curved up; clypeus broadly visible from in front; interfrontal bristles in three pairs, the anterior pair cruciate. Mesonotum with two pairs of dorsocentral bristles; acrostichal setulæ in nine rows between the anterior pair of dorsocentral bristles.

This species can most readily be distinguished by the slight reddish coloring of lower front, face and cheeks, by the excavated face with the broad tubercle between the antenna, the curved up lower margin of the epistome and by the rather broad wings.

There is another specimen from Brookings, South Dakota, apparently a cotype as it is mounted and labeled like those belonging to the Kansas Museum. This was collected by Dr. Aldrich who should be credited with securing the type material.

Numerous specimens from the following localities: Washington: Pullman (Melander). Montana: Three Forks (Melander). Texas: Cotulla (Pratt). Kansas: McPherson (Knaus). Indiana: Lafayette (Melander). Illinois: (Ill. Univ.); Chicago (Melander). Ohio: Columbus (Atwood). New York: Cold Spring Harbor (Melander). Pennsylvania: (Cresson).

Leptocera (*Scotophilella*) **occidentalis** Adams. (Fig. 4.)

Kansas Univ. Sci. Bul. II. 4555 (1904). (*Limosina*.)
Palo Alto, California.

Through the courtesy of the University of Kansas the writer has been able to make a study of the type specimen and notes the following additions to Adams' description:

Interfrontal bristles in three pairs, the middle pair much longer than the others and cruciate; cheeks at vibrissal angle, two-fifths as high as eye. Mesonotum with two pairs of dorsocentral bristles; acrostichal setulae very numerous, short, not arranged in definite rows; scutellum with four marginal bristles. Middle tibiae with five extensor and one flexor bristle in addition to the usual apical bristles; first two joints of hind tarsi a little thickened, first joint two-thirds as long as second. Costa ending at third vein; penultimate sections of third and fourth veins subequal and twice as long as outer crossvein; outer angle of discal cell very short appendiculate. Abdomen short, cylindrical, lateral margins with long hairs; hypopygium large.

Two female species from Claremont, Cal., undoubtedly belong to this species but have the second and third costa divisions equal. In the type specimen the third costal division is so little longer than the second that these structures have been regarded as a variation within the species.

Two specimens from Claremont, California (Baker). (Melander Collection.)

? *Limosina transversalis* Malloch.

Malloch: Report Canadian Arctic Expedition, 1913-18. V. 111 (1919).

Malloch's description of this species gives the following characters: arista very short, thickened at the base and distinctly tapering; vibrissae weak; genal bristle absent; legs slender, without any distinct bristles, even on femora; hind tarsi with basal joint twice as long as second. The wings venation differs from that of other species of this genus in that it has the two crossveins close together and almost directly beneath the termination of the first vein.

These characters are so strikingly different from those commonly found in this group that the writer cannot believe it to be a Borborid. It certainly does not belong to the genus *Lep-tocera*. The species may possibly belong to the *Oscinidæ*.

BOOK REVIEW

Anatomy and Physiology of the Honeybee, by R. E. Snodgrass. McGraw-Hill Book Co., N. Y. \$3.50.

The most written-about insect in the world is the subject of this, a new book that is not only interesting and of great educational value but that is not a duplicate of anything previously published. It reminds one of such classics as Lowne's "Blow-fly" and Miall and Denny's "Cockroach," to say nothing of more recent books on other insects, but the honey-bee has the advantage of exceedingly interesting habits and of being an insect that people like.

The publishers seem justified in saying that it is "an authoritative text on the anatomy, physiology and behavior of the honey-bee. Because of the broad plan of the book, which considers the anatomy of the honey-bee as an adaptation of general insect structure to the special needs of the bee, the book should be of interest to all students of insect life."

Prospective bee-keepers should be warned that this is not a manual on the culture of bees and experienced apiarists may be assured that it contains much of interest that is not to be found in such manuals.—FRANK E. LUTZ.